

29 December 1965

MEMORANDUM FOR: Deputy Director for Science and Technology

SUBJECT: OXCART Side-Looking Radar

1. The intelligence community at the Washington level, including most of the members of COMOR, have had very little experience with the Side-Looking Radar, and I suspect that it will be very difficult for the community to generate a well thought-out and meaningful requirement for the OXCART Side-Looking Radar without more experience. On the other hand, the only way the community can learn enough to generate a good requirement is by working with the problem. In other words, we have a chicken and egg proposition.

2. My own experience in working with the Side-Looking Radar is quite limited, but I did have some contact with two separate radar systems in Viet Nam and was involved in both generating requirements for and exploitation of the resulting radar imagery. My recollections of this experience are as follows:

a. The Navy Integrated Operations~~for~~ Intelligence Systems carried on the Ranger included an excellent Side-Looking Radar carried on the RA5C and a specially built viewer in the Integrated Operational Intelligence Center which could provide considerable magnification of the imagery. I was briefed on the radar and its capabilities at Suitland before going to Viet Nam and later visited the Ranger twice where I saw some of the imagery collected in operational missions and discussed the exploitation of the imagery with responsible personnel in the IOIC. In summary, my conclusions were that although the radar resolution was very good insofar as radar imagery is concerned, it still was not good enough to provide meaningful intelligence concerning the problems encountered in Viet Nam and Laos. This radar did not have a Moving Target Indicator capability. It presented only a static

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picture of terrain, therefore, and this was of little or no value since the area of concern was already well covered with maps and current black and white photography. The officer in charge of the IOIC showed me imagery taken off the coast of Viet Nam that revealed wave patterns along beaches of possible interest to the Marine Corps and indicated that this information was of value to the Marines. I suspect, however, that essentially the same information could be derived from conventional photography. Navy experience seemed to indicate that it was difficult or impossible to use radar imagery collected in the course of a photographic mission, partly because coverage of photographic targets involved maneuvers on the part of the aircraft which destroyed or distorted the radar imagery.

b. The U.S. Army 73d Aviation Company in South Viet Nam included two OV-1B (Mohawk) aircraft among its equipment. The B model Mohawk is equipped with Side-Looking Radar with displays for both stationary imagery and Moving Target Indicator. My organization assigned missions to these aircraft and exploited the resulting imagery. We quickly found that our experience with the fixed target display was similar to the Navy experience with RA5C Radar, i.e., there was almost no usable intelligence produced from it. On the other hand, we found that the Moving Target Indicator produced results of value. This showed us both road and river traffic moving at night in areas that we believed to be under VC control. After a certain amount of experimentation, we were able to develop a system to use this information for tactical purposes and the using troops obtained excellent results.

3. Based on the limited experience outlined above, I suspect that the views expressed in paragraph 5 of the OSA memorandum concerning use of the OXCART radar are probably correct. In other words, if we are using only the image resolving capability of radar in a fixed target display, the only useful imagery will be of such large items as airplanes, railroad trains, etc. On the other hand, if the radar is augmented with a Moving Target Indicator, it might be possible to detect traffic involving smaller vehicles. This would not only reveal the presence of more vehicles, but would inject the added dimension of movement

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into the information available to us. This in turn should provide us with dynamics of the enemy situation. It would probably be necessary to set up a group trained to analyze road and rail traffic before we could get maximum value out of this information. I suspect, however, that information concerning traffic movement in and around important installations such as missile test facilities, missile sites, AE installations, etc., might be of considerable value in interpreting the function of the installation and the level of activity being conducted.

4. I can explore the matter of requirements for Side-Looking Radar imagery further with COMOR when you feel that it would be of benefit. I recommend, however, that you consider the feasibility of adding a Moving Target Indicator feature before we take the matter up with COMOR.

William A. Tidwell

Chairman

Committee on Overhead Reconnaissance

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Office of the DD/S&T

TO:

MR.  
TOWSON

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